

## **THERMODYNAMIC CYCLES USING THERMAL DILUENT**

### **Abstract of the Disclosure**

A thermodynamic system that produces mechanical, electrical power, and/or fluid streams for heating or cooling. The cycle contains a combustion system that produces an energetic fluid by combustion of a fuel with an oxidant. A thermal diluent may be used in the cycle to improve performance, including but not limited to power, efficiency, economics, emissions, dynamic and off-peak load performance, and/or turbine inlet temperature (TIT) regulation and cooling heated components. The cycle preferably includes a heat recovery system and a condenser or other means to recover and recycle heat and the thermal diluent from the energetic fluid to improve the cycle thermodynamic efficiency and reduce energy conversion costs. The cycle may also include controls for temperatures, pressures, and flow rates throughout the cycle, and controls power output, efficiency, and energetic fluid composition.

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